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COASTAL DEVELOPMENT PERMIT APPLICATION
REGULAR CALENDAR

Application number.....**3-00-125 Caltrans Waddell Bluffs Landslide Disposal**

Applicant…….California Department of Transportation, District 5 (Caltrans)
Agent .....Cathy Stettler, Associate Environmental Planner

Project location.....At Waddell Bluffs, seaward edge of State Highway Route 1, between Año Nuevo State Reserve and Big Basin Redwoods State Park, immediately south of the San Mateo-Santa Cruz County line at Postmile 36.3-37.4, approx. 8 miles north of Davenport, Santa Cruz County.

Project description.....Annual stockpiling and disposal of eroding talus material from the toe of Waddell Bluffs. Includes annual marine disposal of up to 30,000 cubic yards of stockpiled landslide material during the period Oct. 15 through Dec.31, by placement onto beach immediately adjacent to fill slope of Highway 1.

Approvals Received……Corps of Engineers Permit No. 20678S (expires 12/01/09); Monterey Bay National Marine Sanctuary, Authorization no. MBNMS-35-1999 (for disposal operations expired 12/31/1999, for stockpiling expires 12/31/2000, reauthorization requested 8/8/00); State Lands Commission Lease no. PRC7034 (expires 12/31/11); Regional Water Quality Control Board, Water Quality Certification (expires 12/31/00, new certification requested 8/22/00).

File documents……Coastal Development Permit file 3-99-089; Caltrans letter of June 14, 2000 that includes: Progress Report: *Ecological Impacts of Caltrans Disposal Operations at Waddell Bluffs,* by Oliver and Mulitsch, Moss Landing Marine Laboratories, June 2000; Final Report: *Effects of Landslide Material Disposal on Special Status Marine Birds, Mammals, and Salmonids in Año Nuevo Bay, California,* by Henkel and Harvey, Moss Landing Marine Laboratories, May, 2000; Final Report: *Geologic and Historic Investigation for Characterization of Bluff Processes Prior to Highway Construction at Waddell Bluffs,* by Duffy and Richman, Caltrans, May, 2000; *Previous Disposal Quantities Report: Quantities from 1994-1998 and Disposal Log, December 1999; Records of Correspondence with Other Agencies; Proposal for Updated and Revised Interpretive Display at Waddell Bluffs.*

Staff recommendation....**Approval, with conditions**

Summary of Staff Recommendation: Approval of this permit, as recommended, will allow the

placement of landslide materials on the face of the fill slope of Highway 1, where it can be reached by wave action during storm events and at high tide. This will continue a practice that has been carried on at Waddell Bluffs, under various coastal permits, since 1978. The annual conveyance of talus--from this naturally weathering mudstone cliff on the inland side of the highway, to the shoreline--is believed to duplicate, roughly, the natural (pre-Highway) annual erosional/depositional cycle at this location. This process also appears to be a significant contributor to beach replenishment at Waddell Beach.

The amount to be placed for marine disposal in any given season will not exceed 30,000 cubic yards. The actual volume of material to be disposed of will depend on the quantity of landslide material that has weathered from the bluff since the previous talus removal cycle. Between 1994 and 1999, this amount fluctuated between roughly 16,000 cubic yards and 27,000 cubic yards.

Under the Commission's previous permit (CDP 3-99-89), the placement of landslide material adjacent to the marine environment was authorized until Dec. 31, 1999, consistent with California Department of Fish and Game (CDFG) recommendations for protection of the steelhead and coho salmon spawning run in nearby Waddell Creek. However, the stockpiling of material accumulated at the base of the bluff on the seaward side of Highway One was allowed until December 31, 2000. Consequently, this year, the landslide material is in the process of being stockpiled but not yet placed for marine disposal. The conditions of CDP 3-99-89 (essentially, a one-year permit) paralleled those of the previously issued coastal development permit 3-94-29 (a five-year permit).

These conditions included the completion of a new or updated environmental evaluation that would describe pre-highway geotechnical conditions, characterize the annual sediment plume, and address the potential for impacts on the habitat of the marbled murrelet, brown pelican, sea otter, coho salmon and steelhead, and other Essential Fish Habitat as defined by the National Marine Fisheries Service (NMFS). These information requirements were considered necessary for the Commission's consideration of an anticipated future request for a new coastal permit, to again allow marine disposal on a long term basis (presumably, 5 year renewable terms as with CDP 3-94-29). The specific topics of the focused environmental evaluation were also intended to concurrently meet the needs of the Monterey Bay National Marine Sanctuary (MBNMS), as required for future reauthorization of their permit for the proposed disposal activity at Waddell Bluffs.

The recommended conditions of approval for the current application would again establish a five-year term, potentially renewable. The recommendation is based on the best evidence currently available. This evidence supports the hypothesis that the annual cycle of stockpiling and disposal approximates as nearly as is feasible the erosion and beach deposition cycle that existed prior to the construction of the highway. However, because some technical environmental studies initiated under the previous permit cannot be completed until next year, the recommended conditions provide for permit termination after only one year if the necessary environmental studies are not completed—or if there is substantial evidence that discredits the assumption that the stockpiling and disposal activity essentially replicates the natural process that existed before the construction of the highway.

Staff Report Contents

I. Staff Recommendation on Coastal Development Permit

The staff recommends that the Commission, after public hearing, **approve** the proposed project subject to the standard and special conditions below. Staff recommends a **YES** vote on the following motion:

> ***Motion:*** *I move that the Commission approve Coastal Development Permit Number 3-00-125 subject to the conditions below, and that the Commission adopt the following resolution:*
>
> ***Approval with Conditions.*** *The Commission hereby grants a permit for the proposed development, as modified by the conditions below, on the grounds that the modified development is consistent with the requirements of Chapter 3 of the California Coastal Act of 1976 (Coastal Act), and will not prejudice the ability of Santa Cruz County to implement its local coastal program conforming to Chapter 3 of the Coastal Act. The project is located between the sea and the first public road nearest the shoreline, is in conformance with the public access and recreation policies of the Coastal Act, and will not have any significant adverse effects on the environment within the meaning of the California Environmental Quality Act (CEQA).*

A yes vote would result in approval of the project as modified by the conditions below. The motion passes only by affirmative vote of a majority of the Commissioners present.

II. Conditions of Approval

A. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

B. Special Conditions

1. **Project Limitations.** This permit authorizes disposal, in any one year, of only the amount of material that accumulates at the base of the bluff since removal during the previous year, not to exceed 30,000 cubic yards in any single year. If more than this amount accumulates in any given year, a separate coastal development permit, or amendment to this permit, for a one-time phased disposal operation shall be required prior to marine or terrestrial disposal. In no case shall the disposed sediments be from any source other than the Waddell Bluffs, comprising the natural geologic formation lying between the mouth of Waddell Creek and the Santa Cruz-San Mateo County line. To the maximum extent operationally feasible, landslide materials shall be placed on the existing slope above the elevation of mean high tide. This permit authorizes disposal to take place only from October 15 through December 31 of each year, consistent with all other conditions contained herein.

2. **Permit Expiration and Extensions.** This permit, if vested or extended in accordance with this condition, shall be valid for a maximum of 5 years from the date of Commission approval (or until Oct. 14, 2005, whichever is first), except that it shall expire earlier, on Oct. 14, 2001, unless the Executive Director determines that 1) the ecological research study referenced in Special Condition 3.a, below, has been satisfactorily completed, and 2) there is no substantial evidence to discredit the assumption that the continued annual stockpiling and disposal process is essentially equivalent to the natural process that occurred prior to construction of the highway. It is intended that the authorized stockpiling and disposal activity be subject to Commission review at least once every five years. Accordingly, the Commission review process may be appropriately initiated by submittal of a request to amend this permit for an extension of the expiration date, prior to actual expiration.

3. **Research and Monitoring Information Requirements.**

   a. This disposal operation shall be coordinated with the current ecological research project under way as part of the requirements of previous permit conditions (Ecological Impacts of Caltrans Disposal Operations at Waddell Bluffs, Oliver & Mulitsch, Moss Landing Marine Laboratories). The results of this study shall be submitted to the Executive Director for review and approval no later than July 31, 2001.

   b. The permittee shall undertake an annual monitoring program to document the volume of material removed from the catchment basin, the amount placed in the marine environment (as previously reported by Caltrans), and the amount that remains at the end of each winter. The results of the monitoring program shall be reported to the Executive Director on an annual basis, with each report due on or before the fifteenth of May of each year. The annual report to the Executive Director shall contain, at a minimum, the following information:

      - The total volume of material removed from the catchment basin adjacent to Waddell Bluff over the course of the preceding year, using the same reporting methodology as in previous years, or alternate methods that allow for valid comparison with previous years.

      - The total volume of material placed on the seaward fill slope of the highway, on the beach or in the marine environment over the course of the preceding year (normally, this will be

the same as the volume removed from the catchment basin).

- The volume of material remaining on the beach at the end of each winter season. This volume shall be determined by photogrammetric digital subtraction techniques; or by an annual survey, conducted by a licensed surveyor or similarly qualified expert; or by other scientifically sound method approved by the Executive Director. The volumetric determination shall be for the state of the beach within seven days of the fifteenth of April of each year. Each annual survey shall be of sufficient accuracy that the volume of the material can be determined to an accuracy of plus or minus 5%, and this level of accuracy shall be certified by a licensed surveyor or other qualified person preparing the report.

- Yearly results of the photographic monitoring protocol recommended in the June15, 2000 advance report Ecological Impacts of Caltrans Disposal Operations at Waddell Bluffs by Oliver & Mulitsch. (The details of this protocol should be included in the final report for the study. This monitoring activity shall begin as soon as practicably possible, but no later than October 1, 2001.)

4. **Authority to Request Modification or Suspension of Work.** If at any time the Executive Director determines that continued beach and ocean disposal of the talus is adversely affecting coastal resources, the Executive Director shall so inform Caltrans in writing. If circumstances warrant, he or she shall also request Caltrans to cease all disposal operations and to not resume such operations until the Executive Director determines that either the operation can be modified (including disposal dates and location) to avoid any further adverse impacts to coastal resources, or additional information shows that there will be no further adverse effect of the disposal operation on coastal resources. In particular, the assistance of the California Dept. of Fish and Game shall be requested with respect to protecting the spawning run of steelhead and coho salmon at Waddell Creek. Caltrans may be requested to modify disposal locations, volumes or timing within the allowed disposal dates, if necessary to protect the spawning run.

5. **Corps of Engineers Approval.** PRIOR TO COMMENCEMENT OF DISPOSAL, permittee shall provide to the Executive Director a copy of a US Army Corps of Engineers permit, or evidence that no permit is necessary.

6. **National Marine Sanctuary Approval.** PRIOR TO COMMENCEMENT OF DISPOSAL, permittee shall provide to the Executive Director a copy of a permit or other authorization, or evidence that no such approval is needed, from the Monterey Bay National Marine Sanctuary. If at any time the Monterey Bay National Marine Sanctuary permit authorization expires or is withdrawn, marine disposal activity under this permit shall be suspended until Sanctuary authorization is reinstated.

7. **Regional Water Quality Control Board Certification.** PRIOR TO COMMENCEMENT OF DISPOSAL, permittee shall provide to the Executive Director a copy of a certification of water quality, or waiver, or other approval, or evidence that no approval is needed, from the Regional Water Quality Control Board.

8. **State Lands Commission.** All marine disposal activities shall be in accordance with the terms of

permittee's current permit from the State Lands Commission (approved through December 31, 2011).

9. **Santa Cruz County.** Grading, landslide or rock containment structures, or other development on the inland side of Highway 1, is subject to the coastal permit jurisdiction of Santa Cruz County. Permittee is responsible for obtaining any required coastal development permits directly from the County. No coastal development permit is required for maintenance activities, such as the removal of talus material from the inland side of the highway, which are determined to be categorically excluded from the permit requirement.

10. **Stockpiling Authorized.** This permit authorizes the continued stockpiling of accumulated talus from the toe of Waddell Bluffs, through Oct.14, 2005. This authorization for stockpiling applies only to the seaward side of the state highway right-of-way, in an amount not to exceed 30,000 cubic yards. In order to minimize adverse visual impacts, the talus material, if stockpiled, shall be placed in large, concentrated piles with open spaces between piles at least as long as the stockpiles (so that at least 50% of the total stockpile length has unobstructed views of the ocean). For example, if the stockpiles are 100 yards long, then the open spaces between them shall be at least 100 yards long. A separate coastal development permit, or amendment to this permit, shall be required for disposal within the coastal zone of any such stockpiles by means other than authorized in this permit.

11. **Public Access.** Any stockpiled talus material remaining after Dec. 31 of any particular year shall be graded so as to accommodate, insofar as feasible, pedestrian lateral access along the seaward side of Highway 1.

12. **Interpretive Exhibit.** This permit authorizes Caltrans to place the updated interpretive exhibit, required pursuant to Coastal Development Permit 3-99-89, in the vicinity of the Waddell Creek public access area. The exhibit shall be placed by December 31, 2000 in the existing interpretive shelter, or at another location convenient to the public and near the stockpile and disposal site, consistent with the requirements and recommendations of the Monterey Bay National Marine Sanctuary.

III. Recommended Findings and Declarations

The Commission finds and declares as follows:

A. General Project Location & Background

The Waddell Bluffs are a natural geologic formation comprised of mudstone and some sandstone, located at the northern extremity of the Santa Cruz County coastline. As the formation weathers, small fragments (talus) accumulate at the base of high bluffs along the inland side of Highway One. The resultant material must be removed annually to prevent road blockage. See Exhibits A through D for project location, site maps and cross-sections.

This application by California Department of Transportation (Caltrans) District 5 is to perform, on an annual basis, marine disposal of up to 30,000 cubic yards of stockpiled talus material. This quantity approximates the maximum amount of material that typically has weathered from the face of the bluff since the previous annual cycle of sediment removal based on recent documented talus accumulation rates (See Exhibit G, attached).

. The proposed disposal work will continue a practice which has been performed under a variety of coastal development permits since 1978, although this method of disposal was certainly used since the roadway construction first interrupted the natural erosional process at the base of the bluffs (see historic photos, Exhibit E).

The Annual Disposal Cycle. Caltrans has constructed a catchment basin and wire mesh rock containment net at the base of the bluff. The accumulated talus is removed from the catchment on an annual basis. The removed material is either stockpiled in the right-of-way on the ocean side of the highway and then dumped on the beach, or dumped directly onto the beach. The disposal site is a 3,000-foot stretch of beach extending from just north of Waddell Creek, to the Santa Cruz-San Mateo County line. This beach—except for the intervening highway—lies immediately seaward of the bluff face. All adjacent waters lie within the Monterey Bay National Marine Sanctuary.

Dumping on the beach is actually a matter of pushing the stockpiled material onto the seaward face of the road fill slope. This means that the toe of the material comes to rest on the upper part of the beach, generally just above the high tide mark (see Exhibit D, attached). The dumped material is then removed by tides and wave action, especially during winter storm events. As the materials are broken down and dispersed in the marine environment over a period of several months, a visible sediment plume extends into the nearby ocean waters. The sediment plume can form as early as the day that disposal operations commence, and can re-form with every storm episode throughout the winter season. By late spring, the sediment plume generally has dispersed.

Permit History. The highway was constructed on its present alignment in the 1940's. Until the early 1970's talus material was routinely dumped over the edge of the highway onto the beach allowing the

natural action of the surf to remove it during periods of high tides and waves, typically during the late fall or early winter. According to a geologic investigation of the site by Caltrans in 1976, during the 1970's Caltrans elected to suspend the historic method of depositing the material in the ocean in favor of using it instead for fill. This included constructing vista points, parking areas, and widening shoulders within the highway right of way. Objections were voiced to the creation of this additional parking. In any event, this strategy was abandoned when it was recognized that suitable locations within the highway right of way would become exhausted and other disposal methods would become necessary.

The above mentioned Caltrans geologic investigation, the earliest document in the Commission's files about the project, further states that: "Prior to construction of the highway, the natural coastal process was for talus piles to accumulate on the beach at the base of the cliffs and be removed by wave action, particularly during periods of winter storms... similar in manner to the removal of talus deposited [by Caltrans] on the upper part of the beach."

In the late 1970's Caltrans elected to again dispose of the talus material onto the beach for dispersal in the ocean. In 1978 permit P-78-597 was granted by the Regional Commission to Caltrans for a one year trial period and in 1979, permit P-79-414 was granted to Caltrans for a two year period. Both permits required monitoring of the effects of the disposal on the beach and ocean environments to determine if approval of a permanent or long-term permit was appropriate.

Moss Landing Marine Laboratories (MLML, a research facility of the California State University) monitored the area under contract to Caltrans. Based on the findings and recommendations of the reports from MLML that there had been no observable adverse impact from the talus disposal, a permit for a five-year disposal program was granted by the Commission in 1981 (permit 3-81-54). That permit contained conditions requiring additional monitoring with a reporting requirement prior to the end of the life of the permit if an additional five year extension would be sought. Again, MLML performed the monitoring and reporting work for Caltrans and, based on the results of that monitoring, in 1986 the Commission granted permit 3-86-182 to Caltrans for a continued disposal program, subject to Executive Director review and approval every five years. Monitoring and other information for the first five year review was to be submitted to the Executive Director no later than July 1, 1992.

The Executive Director received an incomplete set of material including a monitoring report on October 7, 1992, with a cover letter from Caltrans requesting approval to continue the disposal program. Since the material was received three months after the required submittal date, the coastal development permit lapsed, as did other agency permits (e.g., Corps of Engineers).

Caltrans District 4 then made applications for new permits, including a new coastal development permit. Approval was granted for CDP 3-94-29, to annually dispose of 10,000 to 20,000 cubic yards of natural talus material onto the beach as before. The permit allowed this marine disposal activity only during the period Oct. 1-Dec. 31 of each year. The appropriate approvals were obtained from other agencies, including the State Lands Commission, Regional Water Quality Control Board, Corps of Engineers, and Monterey Bay National Marine Sanctuary (MBNMS).

The permit was for a 5-year term, potentially renewable by the Executive Director for subsequent five-year terms if various environmental monitoring and assessment work was completed, and the necessary

approvals obtained from other agencies. Coincidentally during the time period that the data collection for the required environmental assessment should have been taking place, the administrative boundary between Caltrans District 4 and District 5 was shifted, so that the Waddell Bluffs maintenance responsibility was no longer under District 4. Subsequently, it was discovered that the necessary data for the focused environmental assessment had not been collected and therefore no report was submitted by the due date of June 15, 1999. A later examination by Commission staff concluded that, as a result, CDP 3-94-29 was effectively voided and therefore could not be amended or renewed.

Consequently, a limited term, conditioned coastal permit (3-99-089) was granted to conduct marine disposal activity for the 1999 season in anticipation of the completion of pending studies and additional environmental and geotechnical information[1]. It was anticipated that upon Commission staff receipt and review of the required research information, permitting would again be feasible on a five-year renewable basis subject to any ongoing monitoring needs that were identified.

Need for a New Coastal Permit. A new coastal permit is necessary to restart annual marine disposal activities beginning in the 2000 season. A similar situation exists with respect to reauthorization by the MBNMS, the previous authorization having expired December 31, 1999.

On June 15, 2000, Caltrans submitted the research information (see Exhibit F) and the proposal for an updated interpretive display in accordance with the conditions of permit 3-99-089, as required.

On August 24, 2000 Caltrans applied for a Coastal Development Permit to allow continued disposal of talus material on the beach below Waddell Bluffs on a five-year basis. The application also specifies a maximum disposal volume not to exceed 30,000 cubic yards, sufficient to allow for natural fluctuations in talus accumulation at the toe of the bluff.

B. Public Access.

Several Coastal Act sections apply. These include:

Section 30210

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211

Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

[1] The required research information included a study on marine birds and mammals and salmonids, a focused environmental monitoring report and evaluation, a geologic characterization of site processes and a summary of disposal quantities and related parameters in addition to an updated interpretive sign proposal to be displayed on-site.

***Section 30212*.**

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects …

(b) For purposes of this section, "new development" does not include…(5) Any repair or maintenance activity for which the commission has determined, pursuant to Section 30610, that a coastal development permit will be required unless the commission determines that the activity will have an adverse impact on lateral public access along the beach. …

(c) Nothing in this division shall restrict public access nor shall it excuse the performance of duties and responsibilities of public agencies which are required by Sections 66478.1 to 66478.14, inclusive, of the Government Code and by Section 4 of Article X of the California Constitution.

Issue: The obvious concern here is whether the talus material being dumped on the beach will impede public access to or along the beach. A secondary issue is that stockpiling and disposal operations can potentially impair pedestrian movement along the seaward shoulder of the highway, which functions as a coastal trail lateral access link.

Analysis: The narrow width of the beach at the base of Waddell Bluffs has long been an important factor in the ability to move along this stretch of coast. On their march northwards from San Diego, for example, the Portola expedition encountered this obstacle on the morning of Oct. 23, 1769. Presumably because the ocean waves reached the toe of the talus slope, the expedition apparently was forced to wait until low tide before proceeding onwards.

Today, there is a large public parking area serving Waddell Creek beach, part of Big Basin Redwoods State Park. Located just south of the talus disposal area, this is a broad sandy beach that retains its sand even in winter, and extends from this parking area south for about 1,000 feet. Waddell Creek produces a significant annual sediment plume, so it can be hypothesized that eroded sediments from the nearby bluff are not the only important source of beach replenishment here.

In contrast, the disposal area at Waddell Bluffs is a narrow strip of beach that extends northward from the Waddell Creek parking area about 3,000 ft. This seasonally exposed beach is sandy in summer and fall, but most if not all of the sand is removed by winter storm waves, exposing a rocky substrate. The result is a narrow strip of predominately rocky shelves and cobbles, with some sandy areas. Eroded sediments from the adjacent mudstone bluff are believed to be a significant replenishment source.

According to figures from the Santa Cruz County Planning Department, the narrow beach at the disposal site receives very light use even in the summer. This may be attributable to the fact that the farther north one goes along this beach, the more physical obstructions one encounters. In winter, the beach is often impassible north of the disposal site due to wave run-up.

Observation of past disposal operations revealed that, after the talus material was dumped onto the beach,

it partly obstructed pedestrian movement, depending on the amount of material. The whole beach width usually was not covered, leaving a space between the water's edge, at least at low tide, and the talus material. Additionally, when Caltrans dumped portions of the material onto the beach at the State Park parking lot (not part of current proposal), the State Department of Parks and Recreation (DPR) used its own equipment to smooth out the talus to provide a more gradual slope to the material. DPR personnel stated to Commission staff that they have no objection to the disposal so long as it is performed in the manner as it has been in the past, i.e., that the work take place after Labor Day and that the method is the same.

At Waddell Bluffs, the seaward shoulder of the highway (not the beach) serves as the main coastal lateral access route. This informal coastal trail segment connects Año Nuevo State Reserve on the north, to the Big Basin State Park trail system on the south. However, past stockpiling and disposal practices have not always left the seaward shoulder in a "pedestrian friendly" condition. This issue can be addressed by finishing the work in a way that smoothes over rough sections and leaves, wherever feasible, a usable walking surface. This permit is conditioned accordingly.

Finally, the project supports public access by maintaining Highway 1 in good operating condition. The purpose of landslide removal and disposal at Waddell Bluffs is to prevent impairment of public access (particularly vehicular access) along the coast. There is no feasible inland alternative.

Conclusion: Given that the very existence of the beach at Waddell Bluffs is likely dependent, at least in part, on replenishment from the annual accumulation of mudstone talus; that the beach at the disposal area is (according to County data) only lightly used even in summer; that, as conditioned, the disposal will take place only between mid-October and December, a time of very light use of the disposal area beach; that the material typically does not cover the entire width of the beach; that the disposal area is away from the broad sandy public beach at Waddell Creek; and, that as conditioned, pedestrian lateral access will be accommodated along the seaward shoulder of the highway; the disposal of talus material onto the beach, as conditioned by this permit, does not interfere with the public's right of access to the sea nor with access along the coast, and conforms to the applicable Coastal Act public access policies cited above.

C. Protection of the Marine Environment

Applicable Coastal Act policies include:

Section 30230.

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231.

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30240*.*

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Issues: Three closely related issues are apparent: 1) the direct effect of the disposal of talus from Waddell Bluff on the physical and biological environments of the beach and the adjacent intertidal and subtidal areas; 2) the potential effects of the resultant sediment plume on the habitat values of nearby ocean waters and Waddell Creek; and, 3) the potential effects that would hypothetically result if the marine environment were deprived of what (historically) appears to be a natural sediment source.

Analysis: The Waddell Bluffs landform is bracketed by two State Park System units, Año Nuevo State Reserve and Big Basin Redwoods State Park. All coastal waters adjacent to the disposal site fall within the Monterey Bay National Marine Sanctuary. The sediment plume will extend into marine habitat utilized by several sensitive species. Therefore, the proposal needs to be analyzed not only with respect to conformance with the Coastal Act marine resource policies, but also with the policy for developments adjacent to parks and environmentally sensitive habitat areas.

At the time of approval of the 1994 coastal permit (CDP 3-94-29), eight different environmental reports were listed as substantive file documents. These reports addressed geologic, archaeologic, and biologic aspects of the disposal activity, and covered two multi-year monitoring efforts. The relevant information and conclusions were summarized in the document *Final Report: Ecological Impacts of Highway Maintenance Activities at Waddell Bluff: An Active Coastal Landslide*, by Bretz and Oliver, Moss Landing Marine Laboratories, July 1992.

The past monitoring done for the project included sampling of bottom deposits, turbidity studies (suspended sediment in water), beach sediment samples, organism surveys, and observations by divers of the subtidal environment. The 1976 and 1978 geological reports and the subsequent monitoring reports have found that the talus material, Santa Cruz Mudstone, is readily broken up by wave action. The finer sediments are carried away in suspension in the ocean water and the coarser sediments are sorted according to wave energy and particle size. The suspended sediments at certain times have been observed to form a distinct plume. The courser materials are deposited on the beach and subtidal areas,

replenishing the sands that have been carried away by wave action.

It is hypothesized that the disposal method essentially mimics the natural processes that existed prior to construction of the highway, although there are two main differences. These are a) that the length of the area where the material is dumped onto the beach, some 3,000 feet, is about one-half the length of the entire bluff area; and, b) that under previous permits, the landslide material was disposed of over a three month period (October through December) rather than sloughing onto the beach all year long. This does not necessarily mean, however, that the rate at which the material enters the ocean is more concentrated, on average, than it was prior to construction of the highway. The density of the sediment plume depends on the availability of talus during episodes of high tides and strong wave action. Thus, whether the landslide material is placed all at once or gradually, plume development occurs only when the waves can attack and distribute the mass. As described below, previous monitoring reports have concluded that this shorter-term disposal regime has not had any adverse effects.

Waddell Bluffs as a sediment source. Caltrans data collected between 1994 and 1999 demonstrate that the present annual sediment yield from Waddell Bluffs ranges from a high of 25,722 cubic yards (1998, following an El Niño winter) to a low of 16,329 cubic yards (following a La Niña winter). See Exhibit G, attached, for a summary of recent disposal totals. No data are available as to the sediment yield from Waddell Bluffs prior to the construction of the highway, but it was almost certainly lower than the current rate. First, the bluff was armored by "talus,"--a 1905 photo shows the bluff nearly half buried in debris from the cliff. This would have had two effects: providing a buttress that would resist actual landslides, and covering the base of the cliff so it would not be susceptible to more minor intermittent rockfall and spalling. The present highway and fill slope is a much less efficient buttress, since it does not extend as far up the face of the cliff, and much of the previously covered cliff face is now exposed. Second, the 2000 Caltrans report indicates that the cliff face was artificially steepened during road construction in the 1940's; so not only is the overall slope now steeper, but the cliff face below the buttress has been steepened as well. Both of these effects would tend to result in higher erosion rates.

Although it is true that the highway now protects the base of the bluff from marine erosion, the talus pile probably served a similar function in the past. The accumulation of talus, as shown in early photos, demonstrates that marine processes were not sufficient to remove all of the sediments eroded from the bluff. In situations such as this, a dynamic equilibrium tends to become established between marine erosion, accumulation of talus, and subaerial erosion. As marine erosion removes talus, subaerial erosion tends to increase because the bluff is no longer armored or buttressed. Increased subaerial erosion then increases the size of the talus pile, slowing subaerial erosion. A negative feedback loop is thus established, such that the talus pile remains more or less constant in size, and subaerial erosion and marine removal of material are in balance. The rate of subaerial erosion and the size of the talus pile are determined by the capacity of marine erosion to remove material, thus limiting total net erosion.

In the current configuration, the base of the cliff is protected, but marine erosion is replaced by Caltrans' removal of erosional material as it accumulates at the base of the bluff. Since Caltrans has a greater capacity to remove material than the rate at which material is supplied through subaerial erosion, there is no feedback loop. What limits the amount of erosion under these circumstances is the maximum potential subaerial erosion rate--which apparently is about 16-25,000 cubic meters per year.

The material contributed by Waddell Bluffs to the adjacent beach and to the nearshore marine environment is but one component of the total sediment supply. Material also is provided by longshore transport from upcoast in the Santa Cruz littoral cell. A portion of this material is derived from coastal bluff erosion, and a portion from the bed- and suspended-sediment load of rivers. In particular, Waddell Creek, which empties into the ocean immediately upcoast of the bluffs, likely contributes significantly more material than erosion of the bluffs--either before or since construction of Highway one.

The staff report for the 1994 permit (3-94-29) states that according to studies (no reference cited) the natural sand transport by the prevailing downshore wave movement ranges from approximately 500,000 cubic yards/year about one and one-half miles north of the disposal site to 900,000 cubic yards/year at the disposal site, to more than 1,100,000 cubic yards/year about one mile south of the site. According to the monitoring study dated July 2, 1978:

> *It appears that the wave energy available will very easily disperse a volume of 10 to 20,000 cubic yards of ocean disposal each year, provided the actual disposal into the ocean is completed during the later part of the calendar year, preferably by the end of October or early November to take advantage of the winter storms.*

The lack of solid detailed historical baseline data (as discussed above) and the dynamic nature of coastal processes make it also difficult to determine with certainty the contribution of the disposed material to the overall sediment budget of the littoral cell. Current studies are being done by researches at UC Santa Cruz to establish the actual sediment budget in this area. An annual survey of the beach following the disposal operation season will provide the necessary data to evaluate the sediment contribution of the disposal operation in the context of updated scientific information available.

Intertidal and subtidal organisms. Previous monitoring reports have detected no adverse effects on the composition of the beach sands or of the physical or biological environments of the inter- and subtidal areas. The reports have shown an increase in the number of marine animal species in the vicinity of the talus disposal site. It is unknown what caused this increase. It may be due to different sampling methods and standards, or it could be the result of organic material entering the water at the same time as the talus is releasing additional nutrients that would become available as food for microorganisms.

It has now been 20 years since monitoring was first started, although no systematic biologic monitoring results are available for the years 1993-1998. Only informal monitoring, by State Park personnel and others, has been done during this time period, and has not been compiled. Based on information in the various required reports through 1992, there appeared to be no [direct] long-term adverse impacts to marine resources from the seasonal beach and ocean disposal of the talus. One report done by MLML, dated July 1992, states:

> *Upon evaluation of several years of monitoring and field experiment data we are unable to detect a significant ecological impact as a result of Caltrans manipulation at Waddell Bluffs .... From an ecological perspective of intertidal plants and animals at Waddell Bluffs, it does not appear that dumping additional sediment from the slide into the intertidal region significantly restricts certain species from the area or has the potential to restructure the intertidal habitat.*

In an advance report of the latest study, also carried out by MLML, dated June 15, 2000, the researchers conclude that between March and June, a period of maximum ecological change, no physical or ecological impacts from highway talus disposal were observed in the intertidal environment directly under Waddell Bluffs. It would be expected that in this area, the impacts, if any, would be greater and easier to detect. The final report on this study is scheduled to be submitted to Caltrans by June 31, 2001.

Additional habitat considerations. On June 28, 1994, California Department of Fish and Game (CDFG) biologist staff stated, in a phone conversation to Commission staff, that they had reviewed the MLML study and the previous studies and monitoring reports. They stated their belief that the various reports are correct in their conclusion that the marine environment has not and will not be adversely affected by the talus disposal and therefore would not require any written approval for the work.

However, in subsequent correspondence responding to a proposed adjustment in disposal dates, CDFG expressed concerns about the timing of disposal activities. The potential for effects on the Marbled Murrelet, as well as steelhead and coho salmon, were both mentioned. The letter supported an annual monitoring program to assess potential effects to marine resources "…if the program follows similar techniques to those studies previously conducted by Dr. John Oliver of Moss Landing Marine Laboratories" (letter of Aug. 26, 1999, attached as Exhibit H).

Later discussions with U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and Monterey Bay National Marine Sanctuary (MBNMS) staff identified several additional sensitive species and categories of habitat. In order to address the Murrelet issue, Caltrans requested, via the Corps of Engineers, an informal consultation under the Section 7 of the Federal Endangered Species Act (ESA). The USFWS in reply asked for additional information regarding the California sea otter and brown pelican, sediment plume characteristics, and effects due to turbidity. And, the MBNMS staff has added the subject of Essential Fish Habitat (EFH), as designated by NMFS.

The status of each of these habitat considerations, the Caltrans response to each, and future information needs are summarized below.

Marbled Murrelet. This small seabird is State-listed as endangered, and Federally listed as threatened. It is somewhat penguin-like in its excellent diving and underwater hunting abilities. But, unlike the penguin, it is capable flyer as well. According to the book *The Natural History of Año Nuevo*, edited by Burney J. Le Boeuf and Stephanie Kaza (Boxwood Press, 1981), this species

> *… was successful in concealing the location of its nests from biologists until as late as 1974. It was in fact the only North American breeding species for which a nest remained undiscovered. In early August of that year, a tree surgeon working in Big Basin Redwoods State park in the Santa Cruz Mountains discovered a Marble Murrelet nest, with young, 60 meters up in a Douglas fir tree! This finally confirmed conjecture by several local ornithologists that summertime sightings of adults and newly-fledged young at the mouth of coastal streams in Santa Cruz and San Mateo Counties indicated local nesting.*

During the fall, prior to migrating, the waters south of Año Nuevo Island (including offshore from Waddell

Bluffs) are used by the main population of murrelets for resting and feeding. CDFG has recommended that the marine disposal operation be delayed until Oct. 15, or until the birds have migrated away from the area (see letter attached as Exhibit H). In some years, a very few individuals appear to stay in the general area through the winter season (G. Strachan, pers.comm.).

CDFG also recommended a set of at-sea surveys to be conducted by a qualified biologist. This evolved into a more comprehensive interagency agreement between Caltrans and the MLML (CSU-Moss Landing Marine Laboratories). Its focus was to provide a study of possible effects on the habitat of this sensitive seabird species, in order to understand what adjustments may be needed for similar marine disposal activities in the future. The final report was submitted on June 15, 2000.

Before describing the main results of the study, it should be noted that determining the impact of the disposal operation on a species of such dynamic behavior in an environment with so many uncontrolled variables is extremely difficult, if at all possible, to attain. In addition, as noted above, the disposal activities were conditioned to begin after October 15, when it was likely that most of the birds had made their annual migration away from the area. Therefore, the results obtained in this study apply to perhaps only a small group of individuals not representative of the population, and thus no clear cause-and-effect relationships can be established.

As would have been expected, given the reasons explained above, the results on the disposal operation on the Marbled Murrelet were inconclusive. Although there was a shift in the distribution of birds out of the northern half of the study area after disposal, the authors could not provide a conclusive reason for the observed movement. Of the birds that remained in this northern half of the study area, a higher percentage was found closest to the shore (400 meters). No apparent change in the feeding behavior of the Marbled Murrelet was observed, suggesting that prey species of this bird are not affected, at least in the short term, by the disposal (see below).

Little is known about the diet of the Marbled Murrelet. However, considering the potential prey species present in the study area, it was suggested that the cessation of the disposal activity might in fact have an impact on these prey species. One of these species, the night smelt, is known to spawn in sandy beaches with specific sediment composition, as might be found below Highway 1 at the disposal site. Should the disposal operation stop, the beach below the bluffs would theoretically not receive its annual sediment input and it would be eroded, as occurred in the 1970s. This erosion would alter the adequate sediment composition and the species would potentially loose a spawning ground. However, there is no solid data to support or dismiss this idea.

Steelhead and coho salmon. Nearby Waddell Creek is listed by CDFG as a known steelhead and coho salmon stream. It drains one of the least-altered coastal watersheds in all of northern California: no dams, no diversions, no urban development, no history of destructive mining, agricultural or logging practices. Extensive forests of old growth redwood, Douglas fir and native pine stabilize its steep mountain slopes.

Despite this remarkably continuous and intact vegetative cover, erosion and sediment transport are nonetheless a normal and natural feature of Waddell Creek. After the onset of the winter storm season, the stream discharges a significant annual sediment plume following the breaching of the sandbar. The adult steelhead are attracted to the stream by scent, and swim through the plume to reach their home spawning

gravels. According to CDFG, the spawning run generally begins in November and continues through spring. Later in the season, stream energy decreases and a sandbar forms across the mouth. The resulting small lagoon shelters the juvenile steelhead during the late summer and early fall, as they prepare for their life in the sea. Typically, the sandbar is in place from spring to fall, i.e., it forms after the last storms of the season and is breached by runoff and high waves that come with the first storms of the fall.

The annual breach releases the juvenile fish—now imprinted with the scent signature of their home stream—to the sea. During a similar event at the mouth of the Carmel River, the sediment plume has been observed to have a critical protective effect for the out-migrating juvenile steelhead. Specifically, when the lagoon was artificially breached without the presence of sediment in the water, the young fish were easy targets for seagulls, pelicans and crows, all gathered to take advantage of the easy pickings (observations by CDFG wardens and Commission staff). It is assumed that the sediment plume at Waddell Creek has a similar protective "smokescreen" effect. Interruption of Waddell Creek's natural sediment plume would by inference be a potentially significant adverse impact.

The erosion of Waddell Bluffs, immediately upcoast from Waddell Creek, produces a separate sediment plume (these days, with the help of Caltrans). According to the data in previous MLML studies, this coastal bluff erosional plume typically contains only about 10% of the sediment volume inferred for the plume produced by the creek. The prevailing movement of material in the ocean here, as elsewhere along the central California coast, is downcoast. At this location, that would mean toward Waddell Creek.

By process of littoral drift, the disposed sediments from the bluff move downcoast along the beach and merge with those sediments produced by the stream. Prior to the completion of studies such as the 1992 MLML report, concern was voiced over whether the disposed material would block the stream's mouth or contribute to earlier than normal formation or later than normal breaching of the sandbar at the creek mouth. A too-persistent sandbar could interfere with the migration of anadromous fish (in this case, salmon and steelhead). Similar concerns were again raised in subsequent CDFG correspondence (Exhibit H, attached).

However, none of the research reports indicated that movement of sediment from the disposal area toward the creek would adversely affect the formation or breaching of the sandbar at the creek mouth. The CDFG suggested that "a qualified biologist…be present…to determine the extent of the sediment plume." And, if "the mouth of the creek is open at the time of disposal activity, and the [bluff's] sediment plume is visually present in the creek mouth vicinity, the disposal location should be [shifted so that] the sediment plume does not approach the creek mouth."

This permit is conditioned to authorize the Executive Director to request Caltrans to suspend or modify the project in event adverse impacts on coastal resources are detected during the course of disposal operations. CDFG will be requested to assist in identifying circumstances that would imperil the spawning run, and to recommend project modifications as needed to insure the safety of the run. With respect to the outbound journey of the juvenile fish (smolts), CDFG stated in 1999 that no adverse impact was expected because disposal operations would end by Dec. 31. (Exhibit H)

In correspondence dated October 18, 1999, and August 17, 2000 (Exhibit I) the National Marine Fisheries Service concurred with the U.S. Army Corps of Engineers that Caltrans' disposal operation "is not likely

to affect the threatened Central California Coast steelhead, [or] the threatened Central California Coast coho salmon."

Southern sea otter. The California population of sea otter is Federally listed as threatened. Up to five individual animals were seen during the first nine surveys for the Marbled Murrelet study. These sightings were mostly in the kelp forests to the north of the disposal area. Because of the scarcity of kelp beds immediately seaward of and downcoast from Waddell Bluffs, the sediment plume is not expected to directly affect the local sea otter population. The U.S. Fish and Wildlife Service, in a letter dated December 17, 1999 (Exhibit J) concurred with the Army Corps of Engineers that the project would not likely affect the southern sea otter yet acknowledged that operations should stop if new information indicated otherwise. In their final report, the authors of the June 2000 study on the effect of the disposal state that no impact of the operation on the southern sea otter was found.

California brown pelican. The California population of brown pelicans is also Federally listed. An estimated 250 of the birds seasonally roost at nearby Año Nuevo, and approximately 10-20 per day have been observed in the area of the Marbled Murrelet study. According to personal observations by one MLML researcher, Laird Henkel, the pelicans "may prefer to forage near river plumes, often in very turbid water." More information would be needed to establish that the sediment plumes are in fact advantageous for the pelican, or that interruption of a natural sediment plume would in fact constitute a negative impact. However, the June 2000 study on talus disposal impact by MLML researchers found no impact of the disposal on the Brown Pelican. In addition, the U.S. Fish and Wildlife Service issued a concurrence statement that the disposal operation will not likely adversely impact the Brown Pelican.

Essential Fish Habitat (EFH) and Critical Habitat. EFH are areas identified by the National Marine Fisheries Service (NMFS) pursuant to the Magnuson Act and defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The designation can be applied to habitats for salmonids as well as groundfish and rockfish. The Endangered Species Act (ESA) defines "critical habitat" as those geographical areas: (1) that are essential for bringing an endangered or threatened species to the point where it no longer needs the legal protections of the ESA; and (2) which may require special management considerations or protection.

Correspondence from NMFS concerning the Waddell Bluffs marine disposal operation (see Exhibit I) confirms that "the project action, as proposed, will not have an adverse impact on EFH or Federally managed fisheries in these California waters". In addition, the NMFS concurred with the Army Corps of Engineers (see Exhibit I) that the disposal operation will not likely adversely affect the designated critical coho habitat nor the designated critical steelhead habitat.

Information needs. Due to lack of historic baseline data, it is virtually impossible to determine the exact natural erosion process at Waddell Bluffs before the construction of Highway 1. However, based on the geologic characterization study submitted by the applicant (*Geologic and Historic Investigation for Characterization of Bluff Processes Prior to Highway Construction at Waddell Bluffs*, Duffy and Richmand, Caltrans, 2000) and other background information from previous permits, it is reasonable to assume that the disposal operation is indeed a simulation of the natural deposition process that occurred at the site prior to the construction of Route 1.

Apart from the question of whether the amounts and method of disposal represent an authentic replication of natural conditions, to date there have been no detectable adverse impacts of the operation on the marine environment or special status species at the disposal site. However, the amount and timing of the disposal is not constant from year to year, due to variable amounts of material sloughing off the bluff face. The marine environment and ocean conditions are subject to longer term climatic and oceanographic cyclic changes than the time period of the previous environmental assessments. It is therefore appropriate to provide for a continued monitoring program that updates previous work and provides yearly summary reports of disposal data.

Information that can be appropriately recorded onshore by Caltrans include disposal locations within the project site, daily volumes, dates and times, and approximate profile (cross sections) upon completion of each disposal episode.

The monitoring program required by the conditions of this permit will generate the necessary data to evaluate the disposal on an annual basis which will not only provide useful information for future applications at this and other potential sites, but it will also allow the Commission to take the necessary measures if the information shows that the operation needs to be modified. Therefore, continuation of the disposal program as conditioned to include limited long-term monitoring and review is consistent with, and will help implement, Coastal Act policies concerning the protection of the marine environment.

Conclusion: The proposed disposal activity will result in the placement of erosion materials adjacent to a portion of the marine environment that functions as part of the foraging habitat of sensitive bird and marine mammal species. It will produce a sediment plume, potentially extending into waters that function as essential fish habitat. The primary concern previously expressed by other agencies was the potential effect of the sediment plume on these resources.

A substantial body of data and analysis regarding sediment disposal continues to be compiled for this location. The amount of sediments that have been, and are proposed for disposal, are only about 2% of the total longshore sediment transport, inasmuch as this figure is known. Accordingly, it is not surprising that even rather intensive monitoring efforts have not demonstrated any significant biological impacts from the disposal activities. For the same reason, it would be difficult to prove that *depriving* the marine environment of the annual contribution from Waddell Bluffs would have an adverse impact.

The best available information to date supports the conclusion that the landslide material disposal activity at Waddell Bluffs replicates the approximate natural annual cycle of sediment input into the marine system. This natural annual cycle of erosion and deposition is an appropriate baseline for comparison. Accordingly, it can be further concluded that, as required by Coastal Act Section 30240(b), the proposed activity would not degrade adjacent environmentally sensitive habitat areas or park resources, and will be compatible with the continuance of these areas. The biological productivity and quality of coastal waters is anticipated to be maintained at pre-project levels, consistent with Coastal Act Sections 30230 and 30231.

Nonetheless, there continues to be a need for ongoing monitoring to detect long and short-term changes and to better understand the overall system dynamics and project effects. Accordingly, it is appropriate to condition this permit to require yearly monitoring reports. To insure coordination with other agencies

having resource protection responsibilities over the subject disposal site and adjacent public lands, this permit is also conditioned to require evidence of necessary approvals from the Corps of Engineers, Regional Water Quality Control Board, and MBNMS. Therefore, as conditioned, the project will be consistent with the above-cited Coastal Act policies concerning the protection of environmentally sensitive habitat areas and the marine environment.

D. Placement of Fill in Coastal Waters.

The Coastal Act contains special limitations on the placement of materials in the marine environment:

Section 30233.

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: …(5) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. …

(b) …spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems. …

Issue: Can the beach and ocean disposal of talus material in order to keep a highway passable be found to be a permitted type of filling in coastal waters?

Analysis: Sloughing of material from the bluff face onto the beach was apparently an on-going natural occurrence until construction of the highway. As discussed previously, the disposal method appears to essentially mimic the natural processes that existed prior to construction of the highway, but with two main differences. The length of the area where the material is dumped onto the beach is about one-half the length of the entire bluff area and the material is disposed of over a three-month period (October through December) rather than sloughing onto the beach throughout the year. However, this has not had any observable or measurable adverse effects as evidenced by more than 20 years of scientific monitoring.

Section 30233(a) sets up four tests that must be answered affirmatively if placement of fill in open coastal waters is to be approved, as follows:

1) Is the filling in accordance with other applicable provisions of the Coastal Act? Based on the other findings in this staff report, the filling proposed by Caltrans is in accordance with the other applicable provisions of the Coastal Act.

2) Is there no feasible less environmentally damaging alternative? In its 1978 Initial Study and Negative Declaration, Caltrans considered four alternatives besides the proposed beach and ocean disposal method. The alternatives were no action, haul the material to the Santa Cruz City landfill 15 miles south of the project site, dispose of the material at various sites along the highway within a few miles of the bluffs,

or stockpile the material at various sites along the highway.

The no action alternative would mean that the highway would eventually become covered by the talus, rendering it impassable. Hauling to the City dump (now, landfill) was found to be the least environmentally damaging alternative, but there were questions about the long-term availability of the dump and the potential for rising costs. Also, it is now recognized that placement of these sediments in the landfill would consume much-needed space and substantially shorten the useful life of the landfill. The initial study also found that disposing of the material along the highway in the vicinity of the bluffs would not provide a long-term solution, as Caltrans would eventually run out of suitable land disposal sites, and would have adverse impacts on habitat. Greater stockpiling along the highway could have adverse visual impacts and would mean rising costs as distance to stockpile sites lengthened, not to mention loss of parking for vista points and public access.

Because the beach and ocean disposal alternative essentially mimicked the natural processes, Caltrans chose that option with implementation to be for only one year, with monitoring. If the results of that monitoring showed adverse impacts, Caltrans would have ceased the disposal operations and prepared an environmental impact report on the entire concept of disposing of the talus material. The initial monitoring reports and the subsequent reports have all concluded that the chosen method of disposal has not had any detectable adverse environmental impacts. And, no other feasible long run alternatives have been identified.

3) Have feasible mitigation measures been provided to minimize adverse environmental effects? The studies done over the past 20 years indicated that there have been no detectable adverse environmental effects; therefore, no mitigation measures were considered necessary, although on-going monitoring and reporting have been and are required. Additional concerns regarding possible effects on the marine habitat of various sensitive species have been raised in previous applications. A combination of avoidance strategies and mitigation measures applied to the project have avoided, minimized, and compensated for potential environmental impacts, including (1) The Marbled Murrelet study already completed, (2) The selection of a disposal starting date after the main Murrelet population has departed the area, (3) Strict seasonal limits to avoid disposal activities that might impact the steelhead spawning run in Waddell Creek, (4) An updated environmental monitoring report, and (5) The annual monitoring reports.

4) Does the filling represent one of the eight allowable purposes for fill of coastal waters? Previously, in CDP 3-94-29, the Commission found that the annual disposal work at Waddell Bluffs was for an incidental public service purpose. This is one of eight exceptions for placement of fill in coastal waters.

Comparable coastal permits. As evidence in support of this conclusion, previous Commission decisions concerning similar landslide disposal work by Caltrans were cited, as follows. In permit 1-90-109, another permit issued by the Commission to Caltrans, approval was given for the placement of fill associated with the reconstruction of Highway One due to a landslide near Lone Tree Creek in Marin County. That was a far more extreme situation than the Waddell Bluffs disposal operation. Some 3.74 acres of ocean floor were to be permanently covered with 201,000 cubic yards of fill from the reconstruction; subsequent sloughing of the material there resulted in 5.61 acres of ocean floor being covered. In that case, there would be permanent loss of ocean floor habitat and so off-site mitigation was

required in conjunction with the permit.

The 1992 MLML study done on the Waddell Bluffs site included a comparative discussion of the Lone Tree Creek slide site. At that site, the MLML investigators found that intertidal and subtidal habitats had been buried, continued shifting of the material had precluded establishment of other than opportunistic species, and sand scour had increased with the additional sediment from the slide material that was placed into the ocean. The study states that the Lone Tree Creek landslide "may be a model for an extreme landslide event, one occurring every 100 to 1,000 years. None of the natural slides [at Waddell Bluffs] extend so far into the ocean and involve such a large volume of sediment eroding rapidly into nearshore habitats."

Nevertheless, the Commission found that that filling at the Lone Tree site was consistent with one of the eight allowable purposes for fill of coastal waters, specifically with subsection (5) of section 30233(a), because, according to the Commission's findings for that permit: "The highway rebuilding project is a public service, and the proposed marine disposal is incidental to that public service."

Another permit issued to Caltrans for highway reconstruction involving a landslide was permit 3-85-202, issued for work at the McWay Rocks landslide in Julia Pfeiffer Burns State Park on the Big Sur coast. There, some 3,750,000 cubic yards of earth was disposed of seaward of the highway onto the beach and out into the ocean, covering about five acres of intertidal boulders, cobble, and gravel beach and extending about 200 feet seaward of the preexisting shoreline. Of that total amount of material moved, some 30,000 cubic yards was disposed of directly into the ocean. The 1992 MLML study done on the Waddell Bluffs site included a comparative discussion of the McWay Rocks slide as well.

According to that study's discussion of the McWay Rocks landslide, "The slide itself deposited some material directly onto the boulder and cobble beach below the slide and would have lead to an increase in erosion from the slide face and into the marine environment. However, most of the slide was on the upper hillside and was not deposited in marine habitats" [by the slide action]. The large volume of material that ended up on the beach and in the ocean came mostly from Caltrans' manipulation of the landslide by excavating the material in the upper portion of the slide and depositing it onto the beach and into the ocean. Because of unstabilized slopes, the slide material deposited below the highway continues to erode into the ocean. According to the 1992 MLML study, "The manipulation of the McWay Landslide caused severe impacts to local marine communities, unlike Waddell Bluffs." Besides burial of intertidal and subtidal communities, scour increased from the additional sediment load in the water.

The staff report for the permit for the McWay Rocks landslide work states that "the ocean disposal of excess spoils at this location can not be found fully in conformance with this section [30233] of the Coastal Act…Nonetheless, it is apparent that there was an over-riding public interest in re-opening Highway 1, and that a hazard-free design required the complete removal of the slide. Given these objectives, no feasible less environmentally damaging alternatives have been identified."

The Commission invoked Section 30007.5 of the Coastal Act in order to grant the permit. That section states, in part, "that conflicts may occur between one or more policies" of the Coastal Act and that the intent of the Legislature was that "such conflicts be resolved in a manner which on balance is the most protective of significant coastal resources. In this context, the Legislature declares that broader policies .

. . may be more protective, overall, than specific wildlife habitat and other similar resource policies."

The staff report states "that in this particular instance the public interest in maintaining public access along the Big Sur Coast (as provided by Coastal Act Section 30212), in a manner which minimizes risks to life and property in an area of high geologic hazard (Coastal Act Section 30252(l)), requires that the conflict with Section 30233 be resolved in terms of the broader public interest." The permit was conditioned to require Caltrans to submit a landscaping and site rehabilitation plan for the exposed bare areas and a marine resources study to determine the effects of the work on the marine environment.

At another location much further to the south, the Commission in late 1993 granted a permit to Caltrans for a project less like the two previously discussed but more like the Waddell Bluffs project. Caltrans submitted application 4-93-136, seeking approval for the "Deposition of approximately 25,000 cu. yds. of naturally eroded sediments from catch basins and the base of slopes on the inland side of Pacific Coast Highway to the seaward side of the highway and beach . . .at various sites along Highway One in Malibu. Caltrans had been routinely removing the material from the inland side of the highway and dumping it over the seaward edge for over 20 years, without a permit." The purpose of the work at Malibu was similar to the work at Waddell Bluffs.

According to the staff report for the Malibu project, "The applicant contends that the materials removed from the catch basins and eroded from the bluffs on the inland side of the highway and placed along the road shoulders are sediments that would ordinarily reach the ocean naturally if the highway and other development were not present. This argument does seem to have merit, however, what is unknown is whether the proposed disposal would be concentrated in the same areas, at the same rates and quantities, or at the same times as the natural erosion process." Accordingly, the Commission granted a permit for one year to continue the disposal, requiring that Caltrans return to the Commission with an application that provided, among other things, information on disposal sites, amount and type of soils to be disposed of and their contaminant load, and monitoring of effects of the sediment on the marine environment.

According to the staff report, "Given the urgency to clear the catch basins prior to the first rains and to place fill along the road shoulder to protect the highway from erosion during the upcoming rainy season, the Commission finds that it is necessary to allow the applicant to carry out the proposed project immediately" but because more information was needed the permit was limited "to one year from the date of Commission action" and that a new application for further work after the initial one year period "must include significantly more information…so that potential impacts and mitigation measures can be identified and analyzed."

Applicability to other coastal locations. It appears that at least in some circumstances (i.e., those that simulate natural processes) some deposition of earth into the ocean may not have any adverse environmental effects if it is accomplished in a limited, controlled manner with special care that beach, intertidal, and subtidal communities are not permanently buried by the earth material. Thorough, prior knowledge of the characteristics of these communities is preferred. However, there may be instances of catastrophic landslides that pose an immediate threat to public safety, where there may not be existing studies of the area in question or where it may not be feasible to conduct studies prior to beach and/or ocean disposal.

On the other hand, where beach and/or ocean disposal of earth material is contemplated ahead of time as, for example, the preferred method for maintaining a passable roadway, or for continuing beach nourishment where development has interrupted it, or for other purposes meeting the tests of Section 30233, then studies need to be undertaken prior to such disposal. If permits are granted they should be conditioned to require monitoring of the effects of the disposal on the beach, intertidal, and subtidal environments over a number of years. There may also be those instances where some sort of intermediate response may be appropriate. For example, in some landslides where roads are blocked or destroyed, it may be possible to limit initial beach/ocean disposal to the extent necessary to stabilize the slide enough to rebuild the road and then remove unstable material above the road little by little or as necessary to keep the road open. In the meantime the beach and marine environments could be investigated to determine their biological and physical characteristics and if continued marine disposal is appropriate.

From the MLML comparative study it is clear that the three sites discussed therein have differing physical and biological environments. Accordingly, it would not be prudent to extrapolate directly from the apparently successful Waddell Bluffs disposal operation to other areas of the California coast. However, the MLML comparative study and the previous Waddell Bluffs monitoring reports do indicate that beach and ocean disposal of slide material may be possible without detrimental environmental effects. Further study of this is needed to address the various issues in differing coastal settings with differing biological and physical environments, so that future landslides and other, non-slide related, marine disposals of earth material may be manipulated in a way most protective of coastal resources.

Public informational needs. The original Waddell Bluffs permit required Caltrans to place explanatory signs at the stockpile and disposal area for the duration of the permit (one year) to briefly inform the public of the purpose of the work and that it was experimental. The monitoring and studies that have been conducted over the past 20 years indicate that the beach and ocean disposal so far has not been harmful to the beach and marine environments. To someone unfamiliar with the technical background documents or the history of the talus disposal, the stockpiling and disposal operation could raise questions about its propriety.

Consequently, coastal permit no. CDP 3-94-29 included a requirement to develop a permanent interpretative exhibit at the stockpiling and disposal site or at the parking lot just to the south. Caltrans contracted with State Parks to create and install the exhibit. The installed display informed visitors about coastal processes and how this operation fits with those processes. In 1999, the Commission in approving CDP 3-99-089 required Caltrans to update this informational exhibit. This permit is conditioned to clarify where the updated display will be installed.

Conclusion: The disposal proposed at Waddell Bluffs is in conjunction with continuing removal of sloughing bluff material and its disposal into the ocean in order to maintain a passable highway which provides public access to the coast and links coastal communities. Drawing on the experience of the Commission in prior permits for the Waddell Bluffs work, the Lone Tree and McWay Rocks landslides, and the Malibu sediment removal and disposal work, the Waddell Bluffs road repair and maintenance proposal can be considered a public service, with the beach and ocean disposal incidental to that public service. It should be kept in mind that the Waddell Bluffs proposal is much less extreme than either the Lone Tree Creek or the McWay Rocks projects and is more like the Malibu project and essentially mimics a continual, relatively small scale process from which no adverse environmental impacts have been

detected by more than 16 years of monitoring. Therefore the proposed fill is for an "incidental public service" purpose, consistent with subsection (5) of Coastal Act Section 30233(a).

E. Visual Resources

The following Coastal Act policy applies:

> ***Section 30251***
>
> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Issue: Stockpiling of talus material can block views from Highway One out over the ocean and along the coast. Views along the coast, as seen from the beach perspective, could be impacted as well.

Analysis: In the past, Caltrans removed material from the trough on the inland side of the highway and stockpiled it on the ocean side of the highway prior to dumping it onto the beach. Currently, there is material stockpiled on the ocean side of the highway. The proposed operation is to continue in the same manner. In any given year there may be more or less material to stockpile, depending on how much sloughs from the bluff face. There have been, are, and will be some adverse visual impacts from the stockpiling of the talus material.

The stockpiles could potentially completely block the view from the highway over the ocean and along the coast in a one-half to three-quarters of a mile long stretch of highway. A similar stretch of very narrow beach would be subject to visual impacts. Previous permits have been conditioned to require that the stockpiles be consolidated into a few large piles rather than form a continuous wall along the highway.

In texture and color the talus material is not much different from the material on which it is stockpiled or from the material which falls naturally onto the beach. Additionally, while the landslide material could be stockpiled for several months before being dumped into the ocean if there is a large volume of talus that has sloughed off the bluff face, once the material is on the beach it is dispersed and smoothed by waves fairly rapidly.

Another consideration is discoloration of the ocean in the vicinity of the disposal site. According to the monitoring reports, once all of the material has been disposed of on the beach, it takes from four to six months for the material to be completely removed and dispersed in the marine environment, depending on volume of material and ocean conditions. However, because sediment plumes appear to have been a normal and natural occurrence prior to construction of the highway, they can not be fairly considered an adverse impact.

Conclusion: There will be some visual impact from the project, primarily from the stockpiling of landslide material along the ocean side of the highway. There is no other cost-effective place to stockpile the material. The fact that the material is generally stockpiled in October of each year, and is placed for disposal soon after, is a mitigating circumstance. A short interval between stockpiling and disposal is therefore important for insuring that the visual impact does not become significant in duration. Complete and prompt disposal of the annual stockpiles, as proposed by Caltrans, will alleviate the potential for such an impact.

This permit contemplates future stockpiling of talus material as it is collected from the toe of the bluff. As conditioned to require that the material be piled in such a way as to leave view openings comprising at least 50% of the highway frontage, the scenic viewing opportunity will be retained to the degree feasible. Therefore, as conditioned, the proposal can be found consistent with the Coastal Act Section 30251 concerning visual resources.

F. Monterey Bay National Marine Sanctuary

Concurrently with the jurisdiction of the California Coastal Act, the proposed marine disposal activity is subject to the rules governing the Monterey Bay National Marine Sanctuary, established in 1992. The Marine Sanctuary is managed by the National Oceanic and Atmospheric Administration (NOAA), a bureau of the US Department of Commerce. Title 15 of the Code of Federal Regulations, Part 922, Section 922.132 governs prohibited activities within the Sanctuary or that affect the Sanctuary. These prohibited activities include discharging certain materials into the Sanctuary:

> It is unlawful for any person to discharge or deposit any material or other matter except: Fish, fish parts, chumming materials or bait used in or resulting from traditional fishing operations; Water (including cooling water) and biodegradable effluent incidental to vessel operations generated by: marine sanitation devices routine vessel maintenance e.g., deck wash down and gray water (excluding oily bilge wastes); engine exhaust; or dredged material deposited by valid Federal permit at disposal sites authorized by the EPA prior to January 1, 1993. It is unlawful to discharge or deposit from beyond the boundary of the Sanctuary any material or other matter that subsequently enters the Sanctuary and injures a Sanctuary resource or quality, with the exceptions noted above.

This section also states that these activities are prohibited within the Sanctuary "unless permitted by the National Oceanic and Atmospheric Administration (NOAA)."

One important strength of the coastal protection effort in the Monterey Bay region has been the coordination of regulatory efforts. Accordingly, this permit for continuing beach and ocean disposal has been conditioned to require that Caltrans provide the Executive Director with a copy of a permit or other authorization, or evidence that no permit is needed, from the Sanctuary. The conditions also require that in event the Sanctuary authorization is revoked or lapses, that operations under this permit must be suspended as well.

G. Relationship to Santa Cruz County Local Coastal Program (LCP)

Waddell Bluffs are located at the northernmost extremity of the Santa Cruz County coastline. The highway roadbed appears to be constructed on what historically was a beach, inundated by the tides and washed over by waves from time to time (see Exhibit F, attached). Certification of the Santa Cruz County LCP resulted in the delegation of coastal permit authority to the County. However, the Commission is not authorized to delegate the coastal permit responsibility in certain areas, particularly tidelands. Therefore, because the proposed marine disposal activity is believed to occur entirely within the Commission's retained (i.e., "original") jurisdiction, the standard of review for all development projects is the Coastal Act.

In contrast, projects on the inland side of the highway are believed to lie within the County's coastal permit jurisdiction (no precise delineation is available). Here, the standard of review is the County's certified LCP. Under this delegated authority, the County has determined that the annual talus removal operation constitutes an excluded repair and maintenance activity.

H. California Environmental Quality Act (CEQA)

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effects that the activity may have on the environment. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary for Resources as being the functional equivalent of environmental review under CEQA.

Caltrans gave the annual landslide disposal activity at Waddell Bluffs a negative declaration in 1978. In approving coastal permit CDP 3-94-29, the Commission found:

> *From that [1978] document, and from the MLML reports, it can be concluded that the project will have no significant adverse environmental impacts as identified in CEQA. However, the environment should be surveyed again after each five year period of disposal to ensure that no long-term adverse impacts are occurring or will occur. As conditioned to require monitoring and reporting as part of the process for continued approval of the operation every five years, the proposal is consistent with CEQA and Chapter 3 of the Coastal Act.*

Reports and studies subsequent to the 1978 Negative Declaration consistently supported the original conclusion. Among those is the 1992 Moss Landing Marine Laboratories document *Final Report: Ecological Impacts of Highway Maintenance Activities at Waddell Bluff: An Active Coastal Landslide*, by Bretz and Oliver. According to one of the lead scientists who authored the report, its conclusions should remain valid today (John Oliver, pers.comm., Aug.1999). Nonetheless, as detailed above, the Department of Fish and Game, Monterey Bay National Marine Sanctuary and others have raised several issues concerning the potential for effects on the marine habitat.

The currently updated environmental information has shown no significant environmentally adverse effect of the talus disposal operation. In addition, the focused study on marine birds and mammals, although inconclusive, showed no indication of adverse impact on special status species. This environmental

information has enabled Caltrans to review and confirm the status of the Negative Declaration.

Accordingly, the Commission finds that the project as proposed and conditioned will avoid significant adverse effects on the environment within the meaning of CEQA.